

Appendix C:
Description and Cost Estimates of the ARRA/FY2010 Sections

Redefined
Fresno-Bakersfield Design-Build Section
ARRA Track 2 Scope

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4. Introduction

In January 2010 the Federal Railroad Administration (FRA) notified the California High-Speed Rail Authority (Authority) that it had been selected to receive an American Recovery and Reinvestment Act of 2009 (ARRA) Track 2 grant award of up to \$2.25 billion (B) upon satisfaction of certain grant conditions and requirements. From that amount \$400 million (M) has been allocated by USDOT to the Transbay Transit Center. Additionally, \$194 Million of the ARRA funds are earmarked for the completion of the Preliminary Engineering/National Environmental Protection Act/California Environmental Quality Act (PE/NEPA/CEQA) activities for Phase 1 of the California High-Speed Train Project (CHSTP). Hence the remaining funds available for the final design and construction are \$1.656 B, and when matched with California Proposition 1A Bond funds are up to \$3.312 B. Four design/build (D/B) program sections, including the Fresno-Bakersfield Section discussed here, were proposed by the Authority for ARRA Track 2 funding in October 2009, and all four are still considered eligible. Presumably, one of these four eligible sections will ultimately be funded, but which one is not currently known.

In applying for funding under the FY10 Service Development Programs (SDP) solicitation, the Authority has decided to re-assess the original ARRA Track 2 grant scope, identify needed refinements to optimize use of the \$3.312B available funding (while meeting the FRA's "independent utility" criteria), and develop potential additional scope for this year's round of HSIPR funding, which would complement or enhance the ARRA Track 2 section scope and help advance the CHSTP. However, since no decision has yet been made as to which of the four ARRA-eligible projects would ultimately be funded, the Authority has redefined the scope of each of these four project sections, describing how operational independence could be achieved, and defined the measurable benefits of each.

Due to funding constraints, only one ARRA-eligible project/section, potentially augmented by its associated FY10 SDP grant scope, will ultimately be funded. While the FRA would prefer the Authority to prioritize the sections, this is not currently possible, so four new grant requests are being submitted to complement and enhance the four ARRA-eligible project sections. The Authority proposes to combine any FY10 HSIPR Service Development Program funding awarded under the current solicitation with the available ARRA Track 2 funding to construct an enhanced project section of the CHSTP.

The ARRA-eligible scope in each project section needs to be clearly defined since one of the conditions of the current solicitation is that projects that have received HSIPR program funding under previous solicitations (e.g., ARRA Track 2 grants) are not eligible for new funding (i.e., the identical projects cannot be re-submitted). Therefore, as part of preparing new grant requests, the Authority has redefined the four ARRA-eligible project sections.

Projects funded with ARRA Track 2 funds must retain "operational independence" as defined in Sec. 3.5.2 of the Notice of Funding Availability (NOFA), without considering any new funds. As the Authority was awarded only approximately 50% of its original ARRA application value, the FRA requires clarity on how this funding would be applied in case of award, to meet the "operational independence" criteria. Therefore, the Authority has redefined or refined the scope of each of these projects, described how operational independence would be achieved, and identified the measurable benefits of each.

The refined ARRA-eligible project sections remain subject to the schedule constraints (NOD/ROD by Sept 2011). It is understood that while the FY10 HSIPR applications for the enhancements of the ARRA corridors are not subject to the ARRA timelines, the use of these funds is contingent on the completion of the NOD/ROD for the ARRA sections to be on schedule.

Following is a redefinition of the scope of the Fresno-Bakersfield ARRA D/B Program Section.

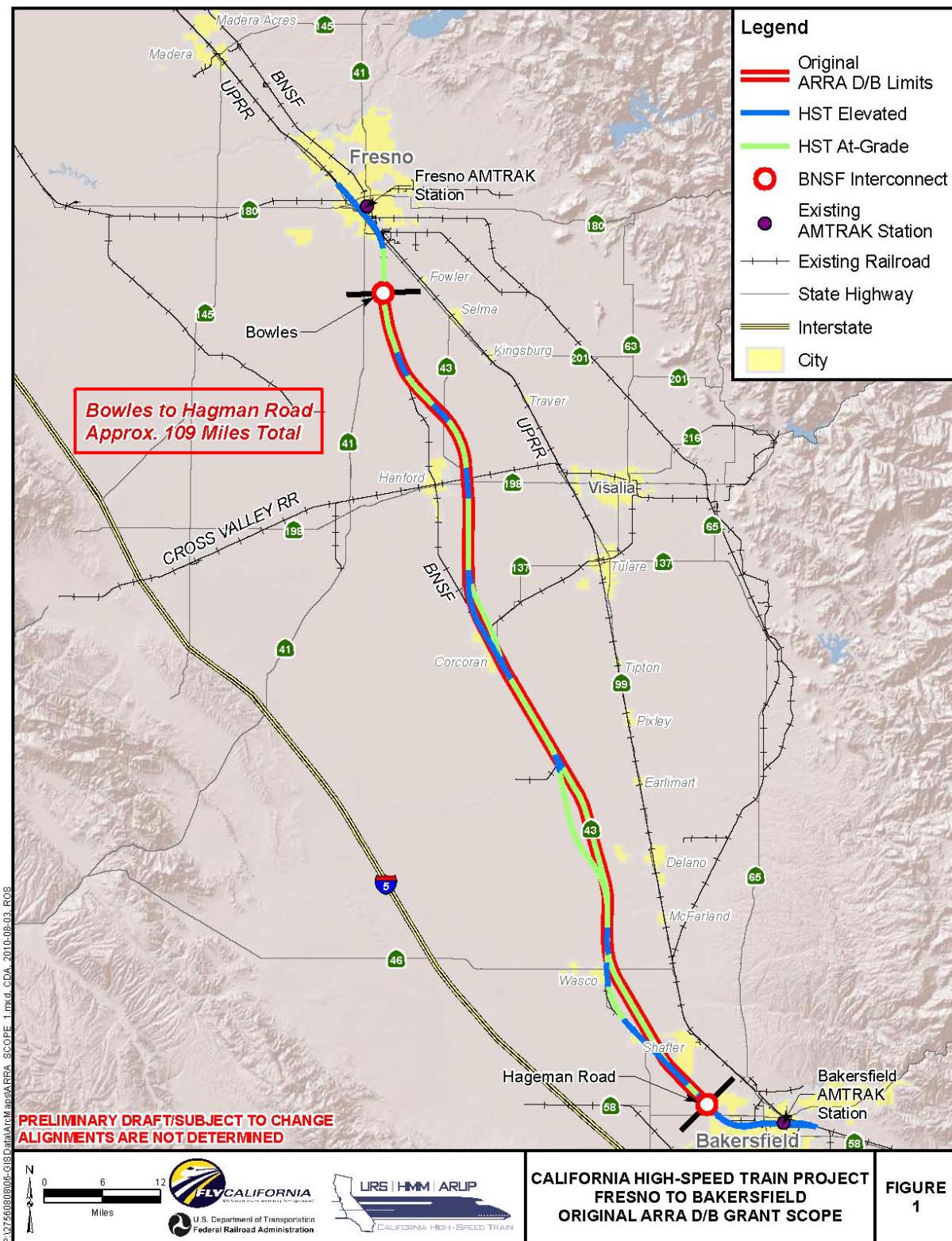
A. Original Fresno-Bakersfield ARRA D/B Grant Scope (see Figure 1):

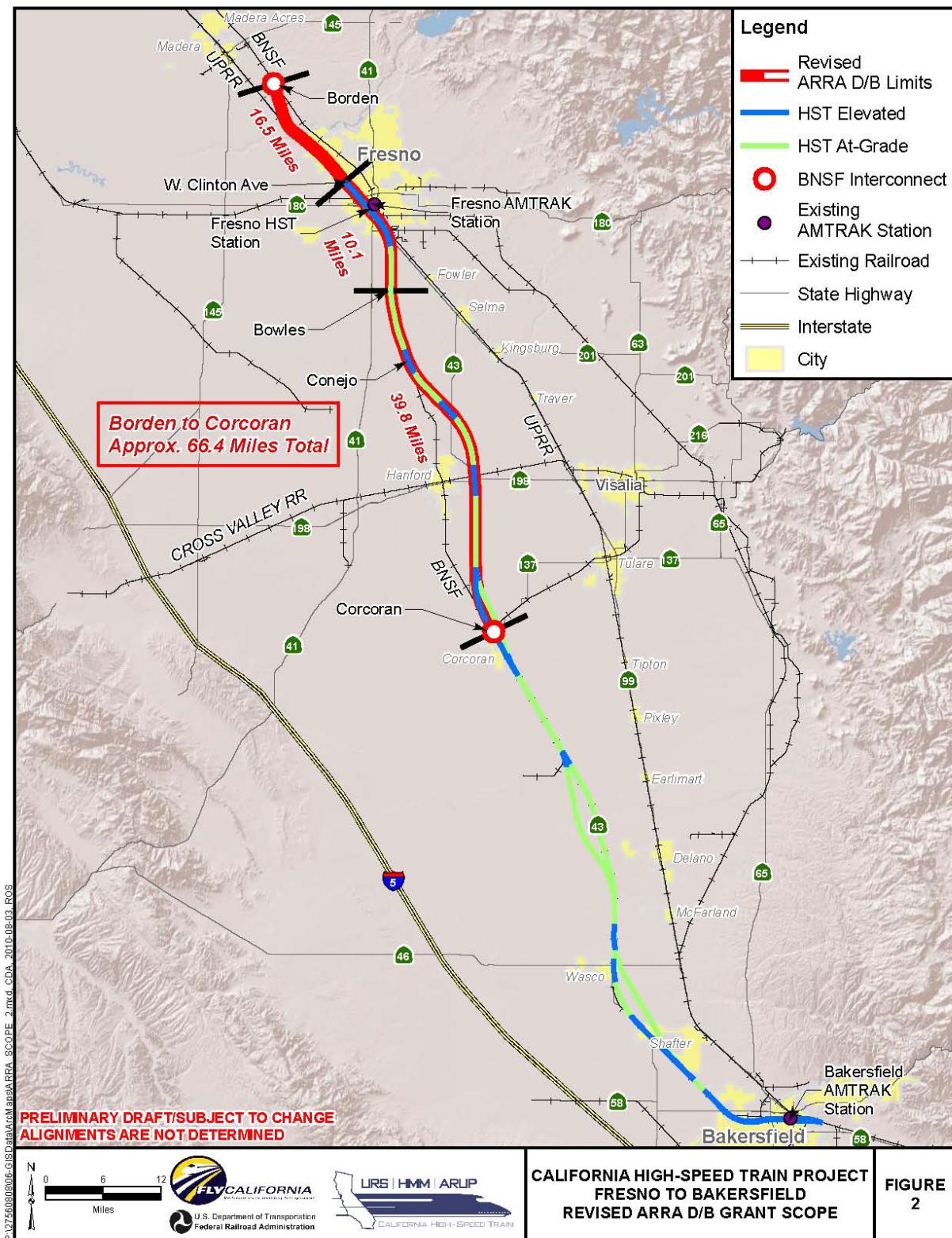
- The Authority applied for \$1.639 B for track and structures (\$749.3 M), right-of-way and sitework (\$689.7 M) and associated professional services and contingency for D/B construction of the rural high-speed train (HST) civil infrastructure, including track, from just south of the Fresno metropolitan area to an area just north of the Bakersfield metropolitan area. This section is approximately 109 miles long, beginning north of the community of Bowles in Fresno County, approximately 8 miles south of downtown Fresno, to Hageman Road in Kern County, approximately 8 miles northwest of downtown Bakersfield. The work included interconnection with the existing BNSF track at each end, thus allowing Amtrak operation from the existing Amtrak station in Fresno to the existing Amtrak station in Bakersfield.
- Amtrak's San Joaquin service would meet "operational utility" requirement. However, the section requires signaling that was not previously included.

B. Refinements and Re-scoping of the Fresno-Bakersfield ARRA section (see Figure 2):

- The total available ARRA Track 2 D/B funding (\$3.312B) would be sufficient to build the complete Fresno to Bakersfield section as originally scoped; however, the Authority would prefer to include the new Fresno HST station in the scope of the refined ARRA grant (shortening the length of new high-speed track that could be built between Fresno and Bakersfield) and then use the new SDP grant funding applied for under this solicitation to extend the HST infrastructure south towards Bakersfield.
- The ARRA Track 2 scope discussed below describes the refined project beginning with a connection to BNSF north of Fresno in Madera County¹, continuing south through and including the new Fresno HST Station, then south through Bowles, the Hanford By-Pass down to Corcoran, connecting to the BNSF just north of Corcoran using an at-grade connection following the C1 alignment. (Designated as A1 alignment in Merced to Fresno EIR/EIS and F2, H and C1 alignments in the Fresno to Bakersfield EIR/EIS.)
- The route alternatives used in the refined ARRA-funded project described below were selected only for purposes of developing a cost estimate to apply for funding. This identification of route alternatives for costing purposes does not prejudice nor influence the final Locally Preferred Alternative still to be determined through the EIR/EIS process.
- A signaling system (PTC) is included as required for independent utility.
- In the interim, Amtrak San Joaquin's would offer "independent utility" coming from Merced on the existing BNSF tracks, and connecting to the new alignment at Borden in Madera County, leaving the new alignment at Corcoran in Kings County and continuing on to Bakersfield. A temporary Amtrak station platform would be constructed in Hanford.
- The ARRA-funded alignment would be approximately 66.4 miles in length and leads to a practical interface with the WYE which would (as part of Phase 1) finally connect in a westerly direction with San Jose.
- For the \$3.312B (\$YOE) available funding, the Authority recommends constructing the following revised project:

¹ The reason for beginning this refined ARRA D/B section so far north of the proposed Fresno HST Station is that there is no location to connect with the BNSF south of the San Joaquin River. The proposed A1 (BNSF) to A2 (UPRR) route connection between Borden and Irrigosa would use the HST alignment being studied as one of the alternatives in the EIR/EIS.





Borden to West Clinton Avenue

- Subsections: Designated as A1-1 and A1-5 alignments in the Merced to Fresno EIR/EIS. Total length is approximately 16.5 miles.
- Environmental Clearance Status: Pending approval as part of Merced to Fresno EIR/EIS.
- Description: Civil infrastructure including track, structures and grade separations. Starting with an interconnection to the BNSF lines in Madera County near the community of Borden, continuing south on the A1-1 alignment to the UPRR corridor just north of the San Joaquin River, and on south to the A1-5 alignment into Fresno, ending at West Clinton Avenue. The A1-1 portion of the alignment will be constructed primarily at-grade, The A1-5 alignment will include a new bridge over the San Joaquin River, and will include a mixture of at-grade and elevated sections into Fresno.

West Clinton Avenue to Bowles

- Subsections: Designated as F2 alignment in the Fresno to Bakersfield EIR/EIS. Total length is approximately 10.1 miles.
- Environmental Clearance Status: Pending approval as part of Fresno to Bakersfield EIR/EIS.
- Description: Civil infrastructure including track, structures and grade separations. Starting at West Clinton Avenue, continuing south on the F2 alignment along the UPRR corridor through downtown Fresno to the new Fresno HST Station, and on south rejoining with the BNSF corridor near the community of Bowles. The entire alignment through Fresno, including the Fresno HST Station, will be on elevated guide-way. Approximately 2 miles at the south end of the alignment will be at-grade.

Bowles to Corcoran

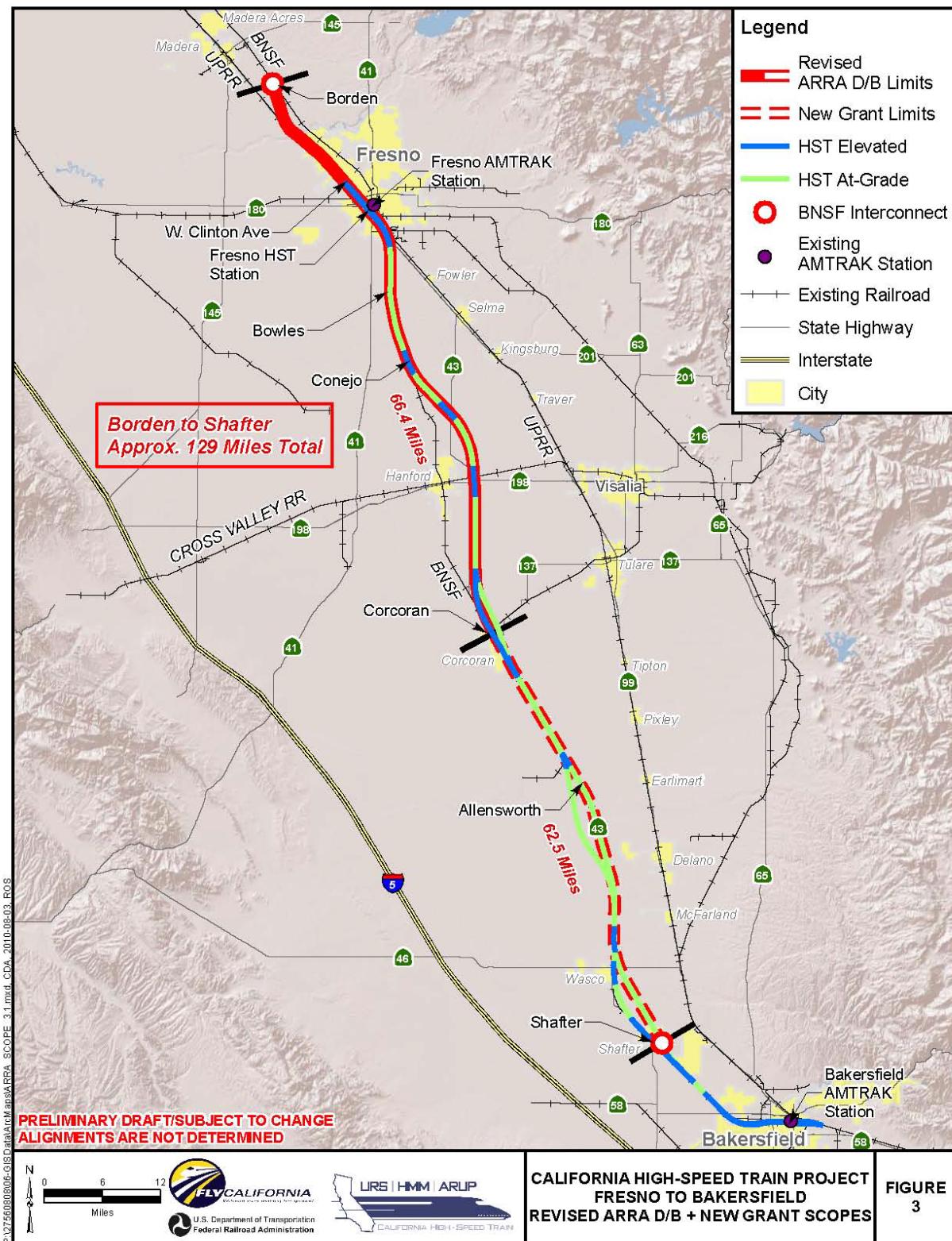
- Subsections: Designated as H and C1 alignments in the Fresno to Bakersfield EIR/EIS. Total length is approximately 39.8 miles.
- Environmental Clearance Status: Pending approval as part of Fresno to Bakersfield EIR/EIS.
- Description: Civil infrastructure including track, structures and grade separations. Starting near the community of Bowles, continuing south on the H alignment along the BNSF corridor. Just south of the community of Conejo, the alignment leaves the BNSF corridor to bypass the City of Hanford to the East. The alignment then follows the C1 alignment south to an interconnection with the BNSF lines just north of the Corcoran city limits. The alignment would be elevated at Conejo to cross over the existing BNSF tracks, through the Kings River floodplain, and over the Cross Valley Railroad and Highway 198. The remainder of the alignment, including the connection to BNSF north of Corcoran, will be at-grade.

C. Fresno-Bakersfield FY10 SDP Grant Application Scope (see Figure 3):

For an estimated \$1.0 B federal share and a 30% state match (\$429 M) for a total cost of \$1.429 B (\$YOE), the Authority proposes to construct the following additional portion of the project:

Corcoran to Shafter

- Starting at the south end of the Hanford bypass (deducting the at-grade connection along the C1 alignment to the BNSF at Corcoran), continuing south on the C2, P and A2 alignments through Allensworth and Wasco on the WS2 alignment to the point where the WS2 alignment re-joins the BNSF just south of Shafter. (Designated as C2, P, A2 and WS2 alignments in the Fresno to Bakersfield EIR/EIS.) Length is approximately 69.4 miles. Accounting for 6.9 miles of alignment C1 described above for the refined ARRA funded project, the total length is approximately 62.5 miles.
- Environmental Clearance Status: Pending approval as part of Fresno to Bakersfield EIR/EIS.
- Description: Civil infrastructure including track, structures and grade separations. Starting north of Corcoran, the alignment follows the C2 alignment to bypass Corcoran to the east, continuing south, the alignment rejoins the BNSF corridor on the P alignment and continues south through Allensworth on the A2 alignment. Just north of Wasco, the alignment leaves the BNSF corridor to bypass Wasco and Shafter to the East on the WS2 alignment. The alignment then follows the WS2 alignment south to an interconnection with the BNSF lines just south of the Shafter city limits. The alignment would be elevated just south of Corcoran and north of Wasco to cross over the existing BNSF tracks. The remainder of the alignment, including the connection to BNSF south of Shafter, will be at-grade.
- A signaling system (PTC or ERTMS) as required for independent utility is included in the estimate.
- In the interim, Amtrak San Joaquin's would offer "independent utility" coming from Merced on the existing BNSF tracks, and connecting to the new alignment at Borden, leaving the new alignment south of Shafter and continuing on to Bakersfield. Temporary Amtrak station platforms would be constructed at Hanford, Corcoran and Wasco.
- The ARRA Track 2 grant-funded length plus the requested new SDP grant added route length totals approximately 129 miles and leads to a practical interface with the proposed WYE near Chowchilla, which would (as part of Phase 1) ultimately connect the HST route in a westerly direction to San Jose.



Redefined
Los Angeles-Anaheim Design-Build Section
ARRA Track 2 Scope

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Introduction

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In applying for funding under the FY10 Service Development Programs (SDP) solicitation, the Authority has decided to re-assess the original ARRA Track 2 grant scope, identify needed refinements to optimize use of the \$3.312B available funding (while meeting the FRA's "independent utility" criteria), and develop potential additional scope for this year's round of HSIPR funding, which would complement or enhance the ARRA Track 2 section scope and help advance the CHSTP. However, since no decision has yet been made as to which of the four ARRA-eligible projects would ultimately be funded, the Authority has redefined the scope of each of these four project sections, describing how operational independence could be achieved, and defined the measurable benefits of each.

Due to funding constraints only one ARRA-eligible project/section, potentially augmented by its associated FY10 SDP grant scope will ultimately be funded. While the FRA would prefer the Authority to prioritize the sections, this is not currently possible, so four new grant requests are being submitted to complement and enhance the four ARRA-eligible project sections. The Authority proposes to combine any FY10 HSIPR Service Development Program funding awarded under the current solicitation with the available ARRA Track 2 funding to construct an enhanced project section of the CHSTP.

The ARRA-eligible scope in each project section needs to be clearly defined since one of the conditions of the current solicitation is that projects that have received HSIPR program funding under previous solicitations (e.g., ARRA Track 2 grants) are not eligible for new funding (i.e., the identical projects cannot be re-submitted). Therefore, as part of preparing new grant requests, the Authority has redefined the four ARRA-eligible project sections.

Projects funded with ARRA Track 2 funds must retain "operational independence" as defined in Sec. 3.5.2 of the Notice of Funding Availability (NOFA), without considering any new funds. As the Authority was awarded only approximately 50% of its original ARRA application value, the FRA requires clarity on how this funding would be applied in case of award, to meet the "operational independence" criteria. Therefore, the Authority has redefined or refined the scope of each of these projects, described how operational independence would be achieved, and identified the measurable benefits of each.

The refined ARRA-eligible project sections remain subject to the schedule constraints (NOD/ROD by Sept 2011). It is understood that while the FY10 HSIPR applications for the enhancements of the ARRA corridors are not subject to the ARRA timelines, the use of these funds is contingent on the completion of the NOD/ROD for the ARRA sections to be on schedule.

Following is a redefinition of the scope of the Los Angeles-Anaheim ARRA D/B Program Section.

A. Original Los Angeles-Anaheim ARRA D/B Grant Scope (see Figure 1):

- The Authority applied for \$4.375 B for track and structures (\$1,126 M), stations (\$555.6 M) right-of-way and sitework (\$2,119 M) and associated professional services and contingency for the HST civil infrastructure including track from LA to Anaheim based on the Dedicated Track Alternative.
- Amtrak *Surfliner* service would meet operational independence requirement, but requires signaling.

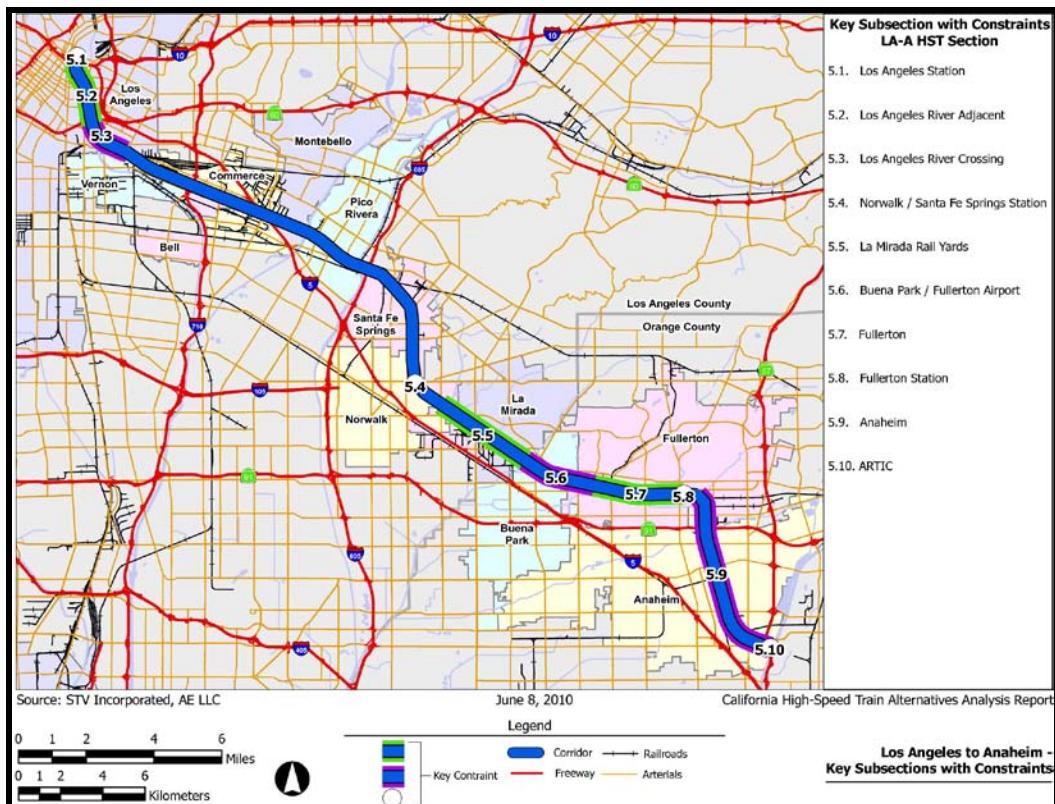


Figure 1

B. Refinements and re-scoping of the LA-Anaheim ARRA section

- The total available ARRA D/B funding (\$3.312B) will not suffice to build this complete segment. Program developments have further increased the costs of certain alternatives which remain applicable.
- The refined scope focuses on infrastructure improvements common to both current alternatives (Dedicated and Shared-Track Alternatives), to the extent possible, and particularly those with the biggest near-term benefits to intercity passenger service, and will stretch from east of the LA River to west of Carmenita Road (see Figure 2), namely:
 - Commerce/Vernon to Santa Fe Springs aerial structure - All passenger trains, except Riverside and San Bernardino County, would diverge onto the new aerial structure east of the LA River and converge back onto the BNSF freight tracks just east of Carmenita Road.
 - Removes all San Diego and Orange County passenger and Amtrak long-distance train operations from interactions with freight operators in the highly congested BNSF Railway Hobart Yard area. Riverside and San Bernardino County passenger operations would continue to use BNSF freight tracks to serve the Commerce station.

- Aerial structure over the San Gabriel River area - Removes passenger operations from two at-grade freight rail-rail crossings and three at-grade rail-road crossings.
- New Norwalk/Santa Fe Springs train station is included to provide current passenger operations the ability to serve the Norwalk/SFS station area, a highly utilized station. (No decision has been made yet as to possible intermediate High-Speed Rail station locations in this section. Both Norwalk/SFS and Fullerton are currently being considered and evaluated in the DEIR/DEIS.) New HST platforms at this station would not be built until later.
- A signaling/PTC system is required for operational independence and has been added to the re-defined ARRA grant scope
- The improvements described in this application are based on the Shared-Track Alternative. This is not intended to prejudice nor influence the final Locally Preferred Alternative still to be determined through the EIR/EIS process.
- The aforementioned work would complete more than 50% of the civil/infrastructure work which would ultimately be needed in this corridor (excluding Los Angeles Union Station and ARTIC Station and electrification). It would include construction of two new tracks for future High-Speed and shared passenger service, in addition to the existing three mainline BNSF freight/passenger shared tracks between Redondo Jct. and Fullerton Jct. Under the initial ARRA Track 2 grant, the new 2-track passenger track alignment could be built from just east of the LA River to east Santa Fe Springs (about 15 miles).
- Operational independence is provided through Amtrak *Surfliner* and Metrolink service that would both use the new infrastructure.

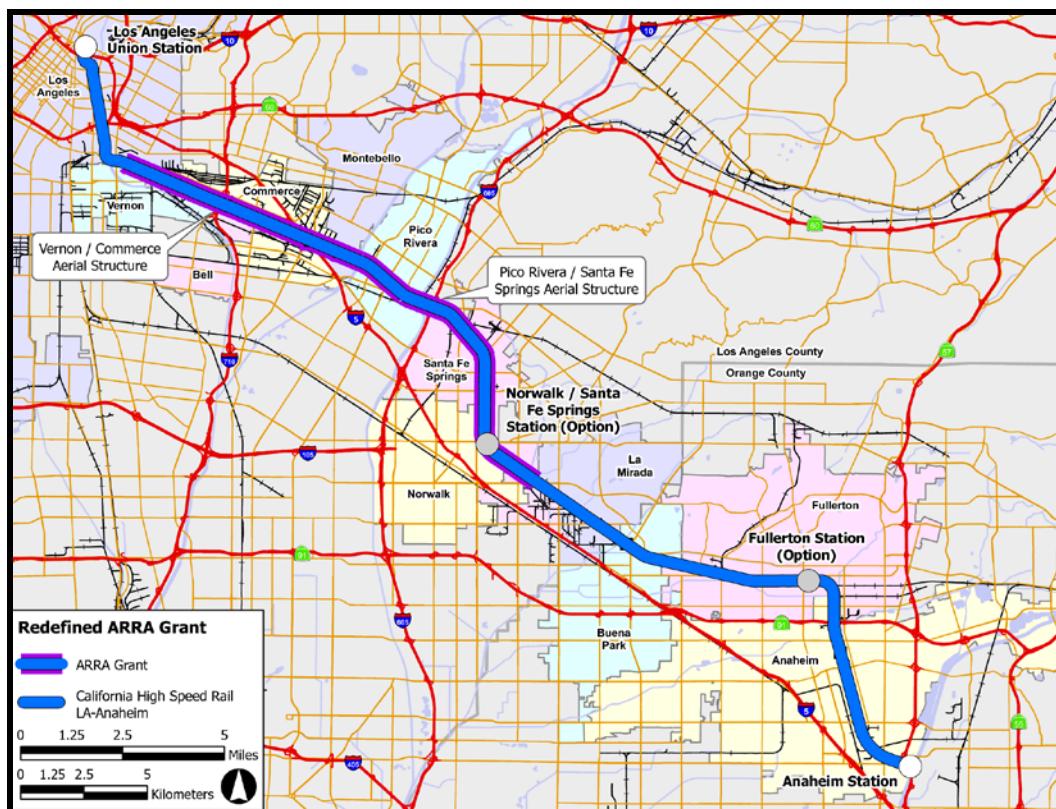


Figure 2

C. Los Angeles-Anaheim FY10 SDP Grant Application Scope (see Figure 3):

- Continue with the civil infrastructure and trackwork not completed with the ARRA funding from just west of Carmenita Road in Santa Fe Springs to Fullerton Jct - All passenger trains, except Riverside and San Bernardino County and long-distance Amtrak, would diverge onto the new aerial structure east of the LA River and remain separated from the BNSF freight tracks through the Fullerton Jct. These trains would converge onto the OCTA tracks south of the Fullerton Jct., effectively eliminating approximately 55 passenger trains from freight interaction between Hobart Yard and Fullerton Jct. on the 3 mainline BNSF tracks in this section.
- Construction of Rosecrans/Marquardt Grade Separation – A high-priority project that improves safety and is needed under all scenarios.
- Relocate Buena Park Metrolink station to allow for construction of a “duck-under” of the freight tracks to separate passengers trains from freight trains. (A duck-under is needed, rather than a flyover, to avoid interfering with FAA flight paths into Fullerton Airport.)
- Close grade crossings or install four-quadrant gates at remaining grade crossings and install Positive Train Control (PTC) in the La Mirada to Anaheim alignment.
- Amtrak *Surfliner* service on this line would meet FRA’s operational independence requirement.
- The improvements described in this application are based on the Shared-Track Alternative. This is not intended to prejudice nor influence the final Locally Preferred Alternative still to be determined through the EIR/EIS process.
- The total cost of this added scope is estimated to be \$1.432 B (\$YOE). A proposed 70% federal share of \$1.0B would be matched by a 30% state share (\$432 M).

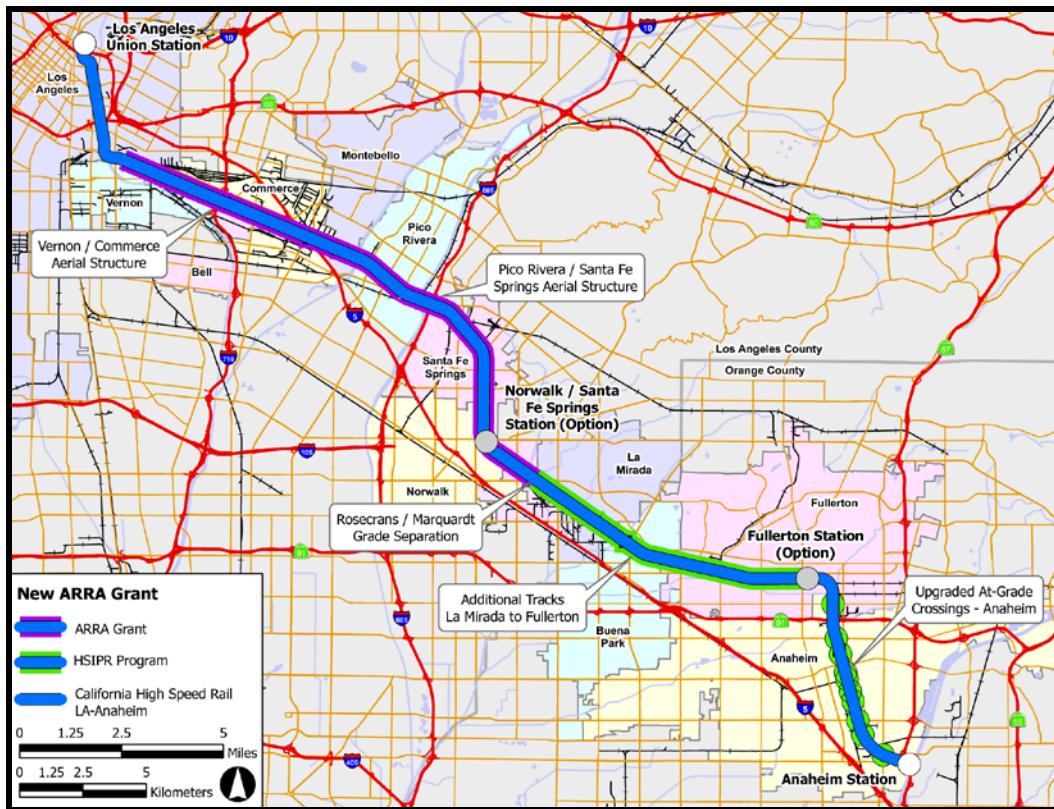


Figure 3

Attachments: Revised Budget and Schedule Forms (OMB No. 2130-0684)

Note: The attached budget form shows a revised total of \$3,296,876,000 for this section. The intent is to apply the full amount of available ARRA Track 2 grant funding (\$3.312 B) to whichever ARRA-eligible section is funded. The difference between the attached revised estimate and the total available budget would be retained as additional Unallocated Contingency.

**Redefined
Merced-Fresno Design-Build Section
ARRA Track 2 Scope**

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Following is a redefinition of the scope of the Merced-Fresno ARRA D/B Program Section.

A. Original Merced-Fresno ARRA D/B Grant Scope (see Figure 1):

- The Authority applied for \$931.9 M for track and Structures (\$603 M), Right-of-Way and Sitework (\$208.4 M) and associated professional services and contingency for the rural HST civil infrastructure including track from approx. 3 miles south of Merced to approximately 3 miles north of Fresno with interconnection to the existing BNSF track, thus allowing operation from the Amtrak stations in Merced to the Amtrak station in Fresno.
- Amtrak's San Joaquin service would meet the operational independence requirement, but requires signaling.

B. Refinements and re-scoping of the Merced-Fresno D/B ARRA section (see Figure 2)

- The total available ARRA D/B funding (\$3.312B) would be sufficient to build the complete Merced to Fresno section as originally scoped; however the Authority would prefer to include the new Merced HST Station in the scope of the refined ARRA (extending the length of the new high-speed track through Merced) and maintaining the originally planned connection into the Amtrak station in Fresno. The new SDP grant funding applied for under this solicitation would enable the new HST Fresno station to be added to the scope and the track extended south approx 20 miles to reconnect with the BNSF alignment at the north end of the Hanford section. This would eliminate the need for connection from the HST mainline into the Amtrak Fresno station.
- The ARRA Track 2 scope discussed below describes the re-defined project beginning with connection to the BNSF at Castle Commerce Center in Atwater, continuing south through and including the new Merced HST Station, then south past Chowchilla and Madera, crossing over the San Joaquin River and terminating with a connection into the Amtrak Fresno Station.
- The route alternatives used in the refined project described herein were selected only for the purposes of developing a cost estimate to apply for funding. This identification of route alternatives for costing purposes does not prejudice or influence the final Locally Preferred Alternative still to be determined through the EIR/EIS process.
- In the interim, Amtrak San Joaquin service could provide operational independence from the northern connection to the BNSF at Castle Commerce Center, through Merced and into the Amtrak Station in Fresno.
- A signaling system (Positive Train Control) for operation of Amtrak trains on the new alignment would be needed and is included in the estimate.
- The ARRA funded alignment would be approximately 67 miles in length and not only completes the section from Merced to Fresno, but provides for the adjoining future mainline connection from Fresno to San Jose in the vicinity of West Chowchilla.
- For the \$3.312B (\$YOE) available funding, the Authority recommends constructing the following revised Project Scope:

Castle Commerce to Merced HST Station

This is the connection from the BNSF line at Atwater, leaving the alignment on the west side of the BNSF and running between and parallel to Trindale Road and Franklin Road towards the UPRR alignment. The alignment will transition from at grade to an aerial structure to cross over the SR 99 and the UPRR. The alignment will stay elevated and adjacent to the west side of the UPRR and connect into the elevated Merced HST Station. The total length is approximately 5 miles.

Figure 1. Original Merced-Fresno ARRA Design/Build Grant Scope

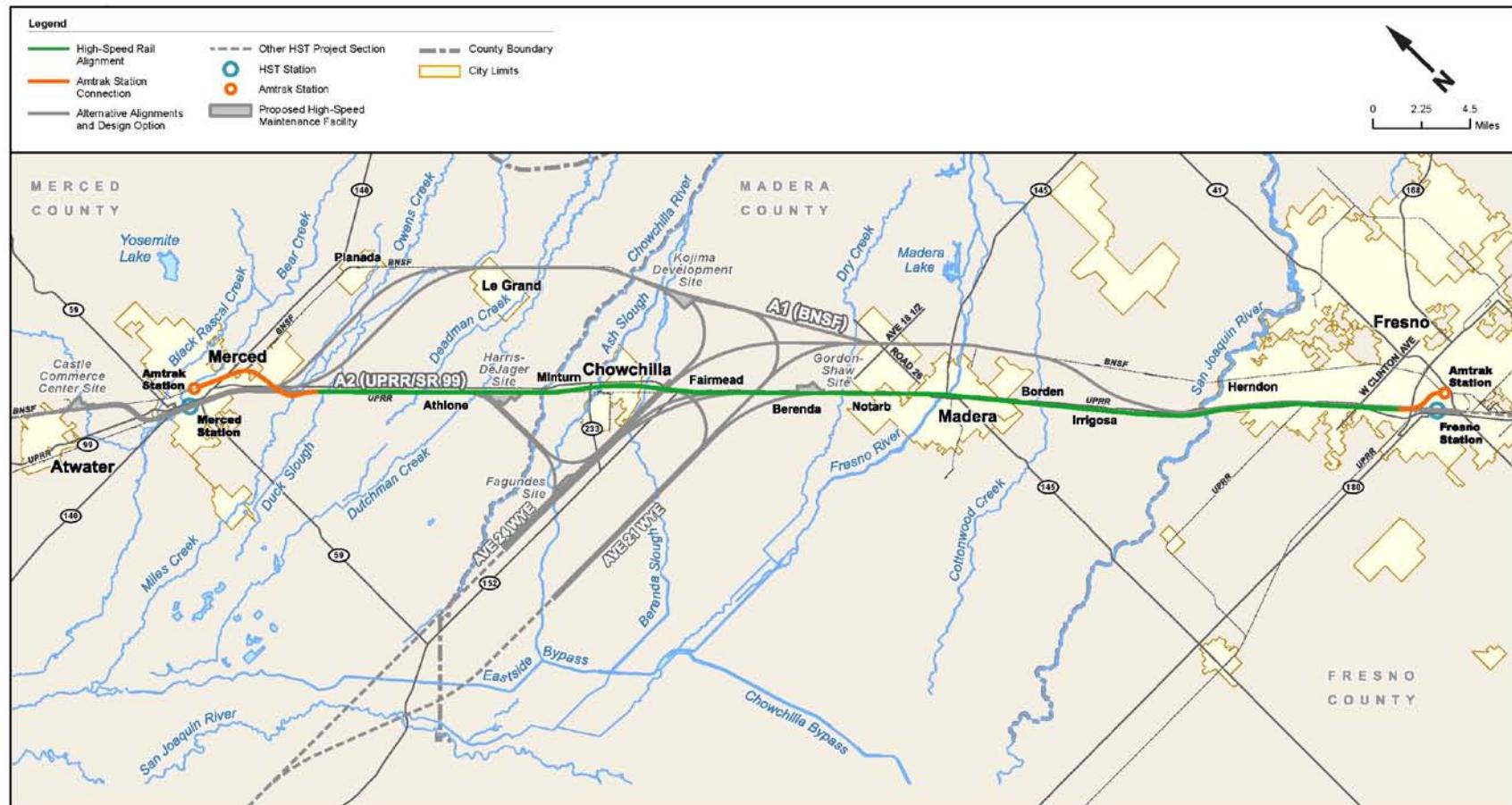
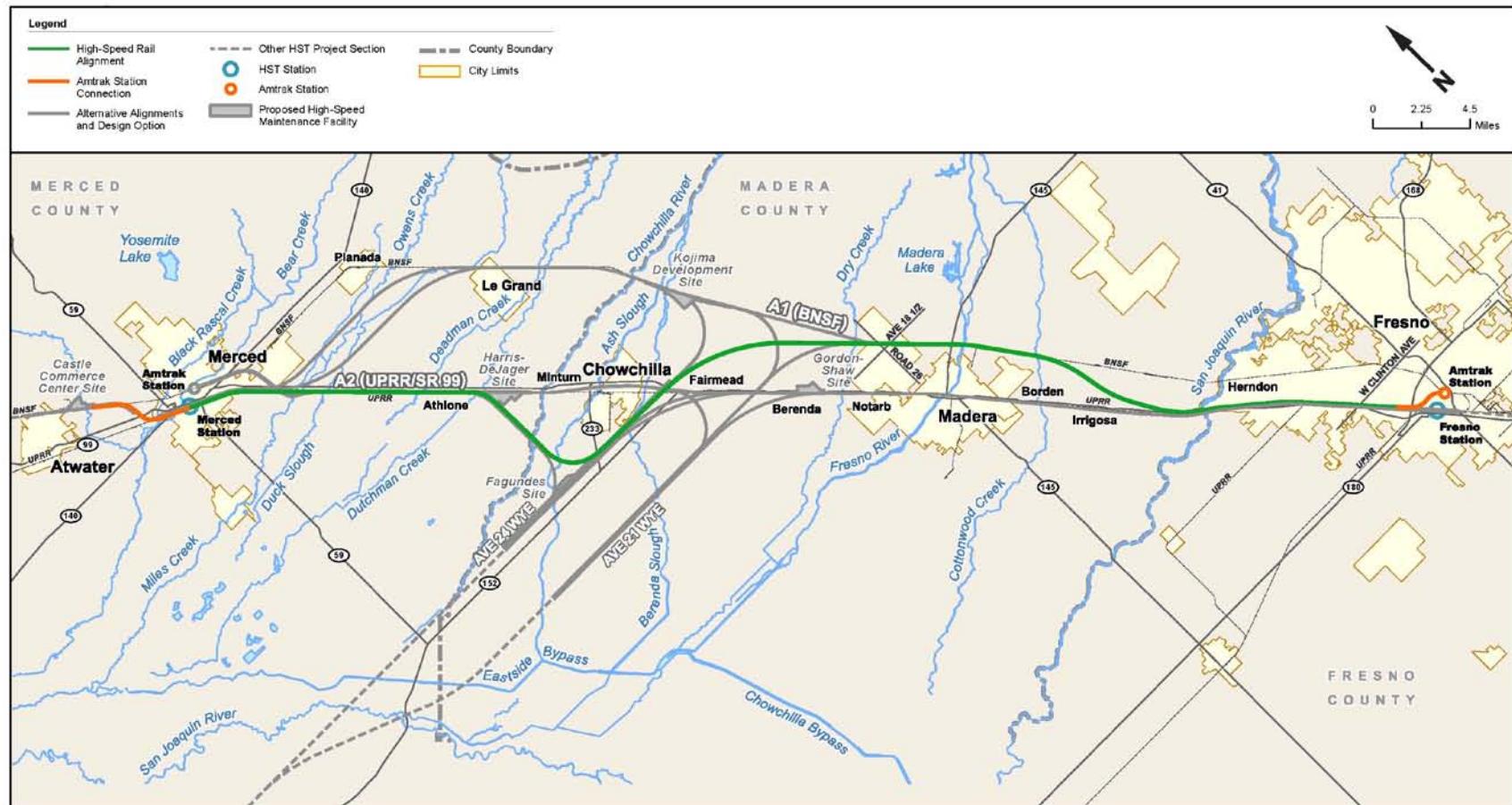


Figure 2. Revised Merced-Fresno ARRA Design/Build Grant Scope



Merced HST Station to Athlone

From the elevated HST Merced station the alignment transitions down to grade over a distance of approximately 3 miles, the alignment then continues south, running adjacent to and on the west side of the UPRR to Athlone, where it starts to move away from the UPRR moving to the west side of the City of Chowchilla. The total length is approximately 13 miles.

Athlone to Avenue 24 Wye Connection, (San Jose to Fresno connection)

The alignment curves to the west from the UPRR at Athlone and runs in proximity and parallel to Road 12 before reversing the curve to connect into the San Jose to Fresno alignment running adjacent to Avenue 24. The alignment will be at grade, except for where the HST tracks cross over themselves to complete the Wye connection. The total length is approximately 8 miles.

Avenue 24 Wye Connection,(San Jose to Fresno connection) to BNSF near the intersection of Road 26/Ave 18 ½ in Madera

The alignment runs adjacent to the south side of Ave 24 in a south easterly direction. The alignment transitions from at grade to an elevated structure to cross over the UPRR and continues elevated to cross SR99 and then transitions back down to grade before reaching then BNSF alignment at Road 26 / Ave 18 ½ where it starts to run parallel to the west side of the BNSF. The total alignment length is approximately 14 miles including approximately 1.5 miles of elevated structure.

Road 26/Ave 18 ½ intersection to the San Joaquin River

The alignment runs adjacent to the west side of the BNSF for approximately 7 miles before turning away to the west back towards the UPRR alignment on the south side of Madera where the alignment becomes adjacent to the east side of the UPRR and transitions from at grade to elevated to cross over the San Joaquin River. The total alignment length is approximately 15 miles.

San Joaquin River to West Clinton Avenue (Fresno)

After crossing the San Joaquin River on the east side of the UPRR, the alignment stays elevated to cross over the UPRR and Golden State Boulevard, the alignment then transitions down to be at grade for appox. 2.5 miles between Herndon and Shaw and the transitions back to an elevated structure to fit between to UPRR on the East and a re-aligned SR 99 on the west. The alignment is elevated over West Clinton Avenue. The total alignment length is approximately 8 miles.

West Clinton Ave to the Fresno Amtrak Station

The alignment transitions from the west side of the UPRR to the east side of the UPRR south of West Clinton Ave and runs parallel to the UPRR to Divisadero St.. The alignment then starts to leave the HST alignment to travel in the vicinity of Divisadero St until connecting into the BNSF alignment on the north side of the Amtrak Fresno Station. The total alignment length is approximately 4 miles.

Note: The attached budget form shows a revised total of \$3,311,749,000 for this section. The intent is to apply the full amount of available ARRA Track 2 grant funding (\$3.312 B) to whichever ARRA-eligible section is funded. The difference between the attached revised estimate and the total available budget would be retained as additional Unallocated Contingency.

C. Merced-Fresno FY10 SDP Grant Application Scope

To differentiate between the refined Merced to Fresno ARRA D/B scope above and the new grant application scope, a brief description of the changes follows:

- The last sub-section from West Clinton Ave to Fresno Amtrak Station would be eliminated and replaced with the following new sub-section from West Clinton Ave to E Conejo Avenue, approximately 20 miles south of Fresno.

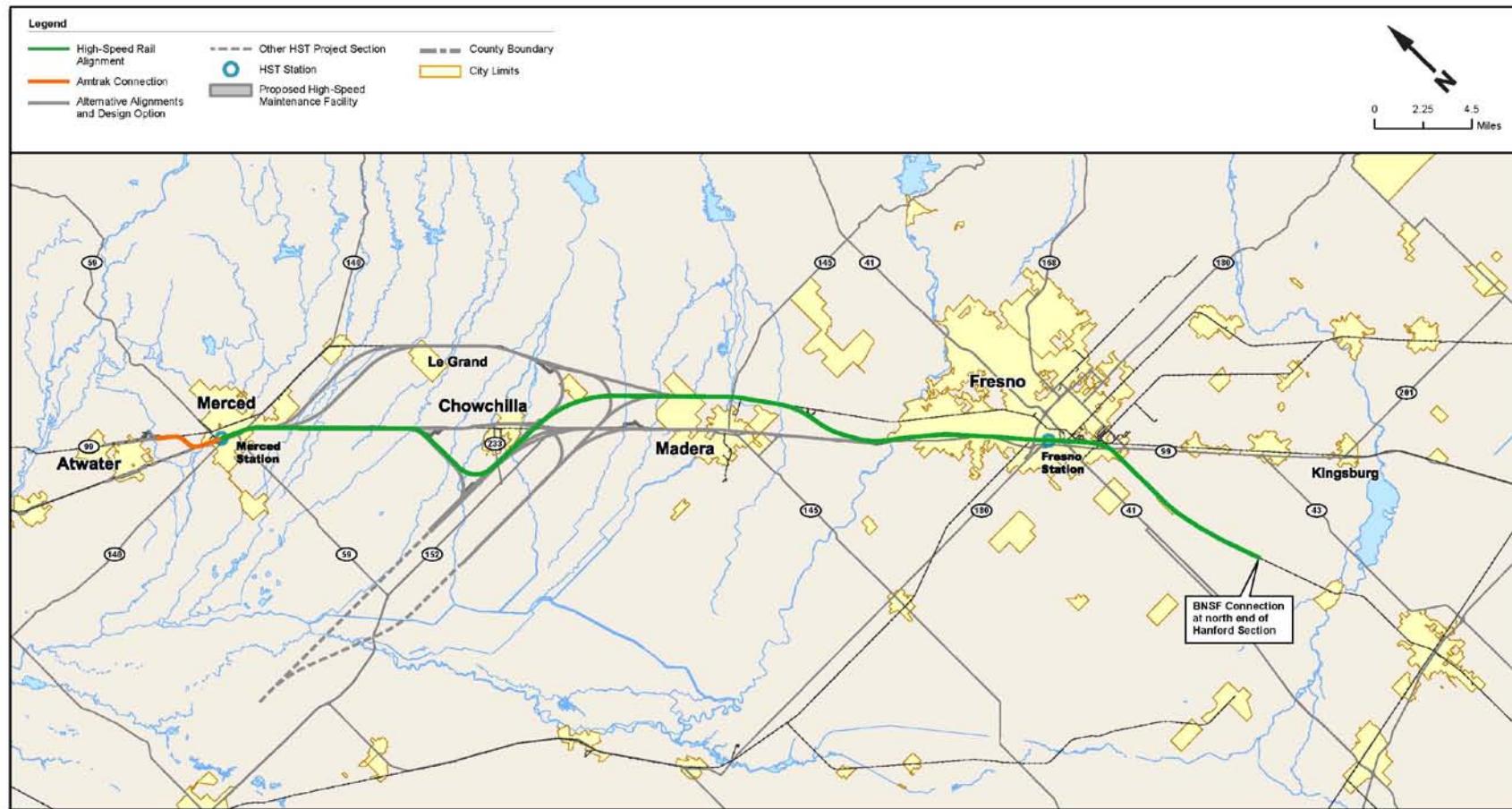
West Clinton Avenue to E Conejo Avenue

- The alignment transitions from the west side of the UPRR to the east side of the UPRR south of West Clinton Ave and runs along the UPRR corridor through downtown Fresno to the new Fresno HST Station, on the south side of Fresno the alignment transitions from elevated to at grade and rejoins the BNSF alignment approx. 20 miles south of Fresno at E Conejo Ave. The total alignment length is approximately 24 miles, of which 12 miles will be at grade at the southern end of the sub-section.

With this addition, the ARRA Track 2 grant-funded plus new SDP grant-funded alignment would be 84 miles in length (see Figure 3). Amtrak's San Joaquins would offer operational independence from the connection to the existing BNSF north of Merced at Castle Commerce Center, passing through the new HST stations at both Merced and Fresno and reconnecting to the existing BNSF south of Fresno to the north end of the Hanford section in the vicinity of E Conejo Avenue.

The total cost of the proposed added scope is estimated to be \$1,077,955,000 (\$YOE). The proposed 70% federal share of \$754,570,000 would be matched by a 30% state share (\$323,385,000).

Figure 3. Revised Merced-Fresno ARRA Design/Build Grant Scope with New Grant Scope Added



**Redefined
San Francisco-San Jose Design-Build Section
ARRA Track 2 Scope**

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Introduction

In January 2010 the Federal Railroad Administration (FRA) notified the California High-Speed Rail Authority (Authority) that it had been selected to receive an American Recovery and Reinvestment Act of 2009 (ARRA) Track 2 grant award of up to \$2.25 billion (B) upon satisfaction of certain grant conditions and requirements. From that amount, \$400 million (M) has been allocated by USDOT to the Transbay Transit Center. Additionally, \$194 M of the ARRA funds are earmarked for the completion of the Preliminary Engineering/National Environmental Protection Act/California Environmental Quality Act (PE/NEPA/CEQA) activities for Phase 1 of the California High-Speed Train Project (CHSTP). Hence the remaining funds available for the final design and construction are \$1.656 B, and when matched with California Proposition 1A Bond funds is up to \$3.312 billion. Four design/build (D/B) program sections, including the San Francisco-San Jose Section discussed here, were proposed by the Authority for ARRA Track 2 funding in October 2009, and all four are still considered eligible. Presumably, one of these four eligible sections will ultimately be funded, but which one is not currently known.

In applying for funding under the FY10 Service Development Programs (SDP) solicitation, the Authority has decided to re-assess the original ARRA Track 2 grant scope, identify needed refinements to optimize use of the \$3.312B available funding (while meeting the FRA's "independent utility" criteria), and develop potential additional scope for this year's round of HSIPR funding, which would complement or enhance the ARRA Track 2 section scope and help advance the CHSTP. However, since no decision has yet been made as to which of the four ARRA-eligible projects would ultimately be funded, the Authority has redefined the scope of each of these four project sections, which are included in the four new grant application submittals.

Due to funding constraints only one ARRA-eligible project/section potentially augmented by its associated FY10 SDP grant scope will ultimately be funded. While the FRA would prefer the Authority to prioritize the sections, this is not currently possible, so four new grant requests are being submitted to complement and enhance the four ARRA-eligible project sections. The Authority proposes to combine any FY10 HSIPR Service Development Program funding awarded under the current solicitation with the available ARRA Track 2 funding to construct an enhanced project section of the CHSTP.

The ARRA-eligible scope in each project section needs to be clearly defined since one of the conditions of the current solicitation is that projects that have received HSIPR program funding under previous solicitations (e.g., ARRA Track 2 grants) are not eligible for new funding (i.e., the identical projects cannot be re-submitted). Therefore, as part of preparing new grant requests, the Authority has redefined the four ARRA-eligible project sections.

Projects funded with ARRA Track 2 funds must retain "operational independence" as defined in Sec. 3.5.2 of the Notice of Funding Availability (NOFA), without considering any new funds. As the Authority was awarded only approximately 50% of its original ARRA application value, the FRA requires clarity on how this funding would be applied in case of award, to meet the "operational independence" criteria. Therefore, the Authority has redefined or refined the scope of each of these projects, described how operational independence would be achieved, and identified the measurable benefits of each.

The refined ARRA-eligible project sections remain subject to the schedule constraints (NOD/ROD by Sept 2011). It is understood that while the FY10 HSIPR applications for the enhancements of the ARRA corridors are not subject to the ARRA timelines, the use of these funds is contingent on the completion of the NOD/ROD for the ARRA sections to be on schedule.

Following is a redefinition of the scope of the San Francisco-San Jose ARRA D/B Program Section.

A. Original San Francisco-San Jose ARRA D/B Grant Scope (see Figure 1):

- The Authority applied for \$1.960B for electrification (\$741M), communication & signaling -PTC (\$213M), stations (\$392M), grade separations \$327M) and associated professional services and contingency.
- It is unclear whether Caltrain service would meet FRA's operational independence requirement; according to the FRA, the proposed infrastructural improvements do not meet their funding criteria to ensure "a minimal operating segment of new or substantially improved high-speed or intercity passenger rail service".

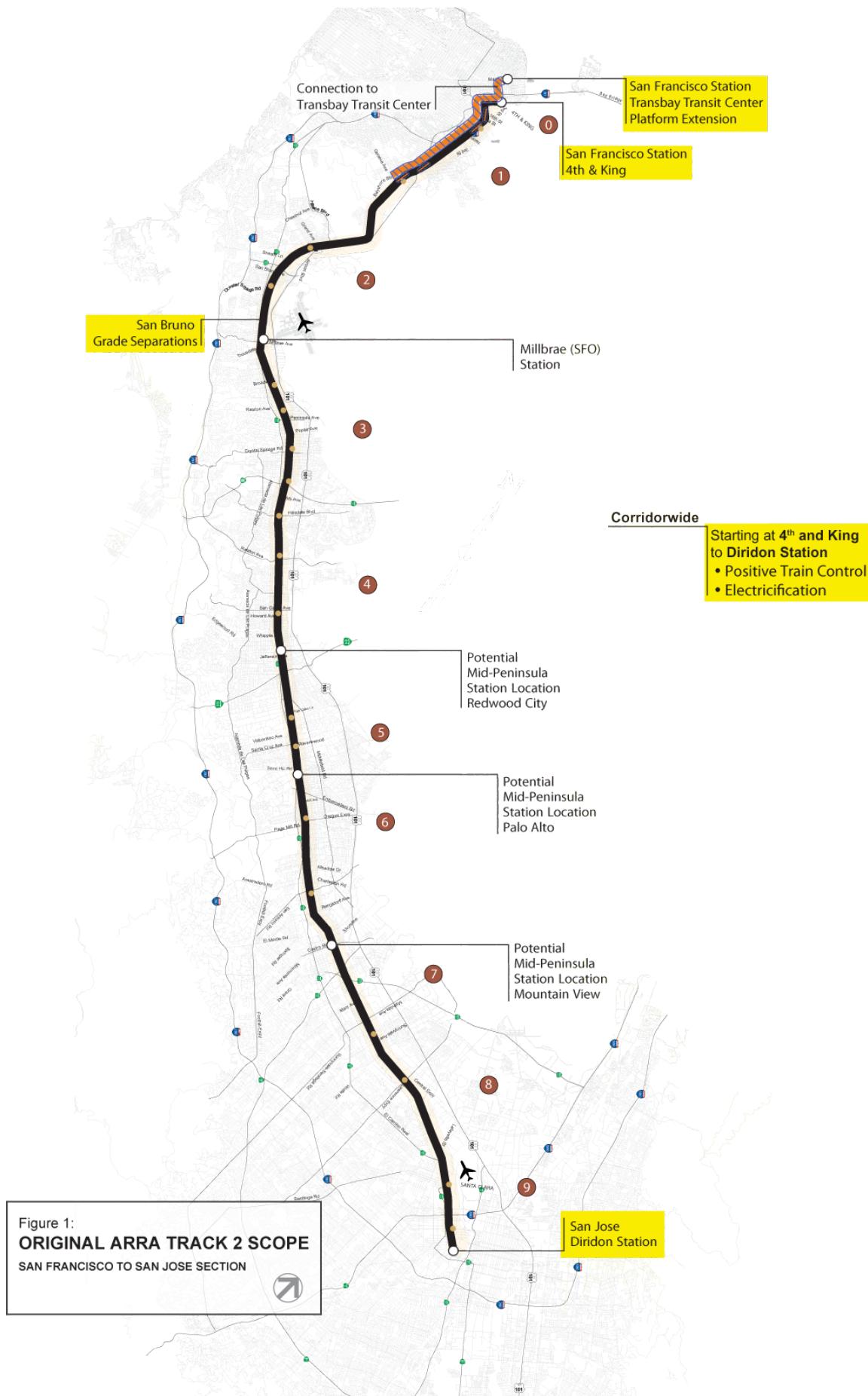
B. Refinements and re-scoping of the San Francisco-San Jose ARRA D/B Section

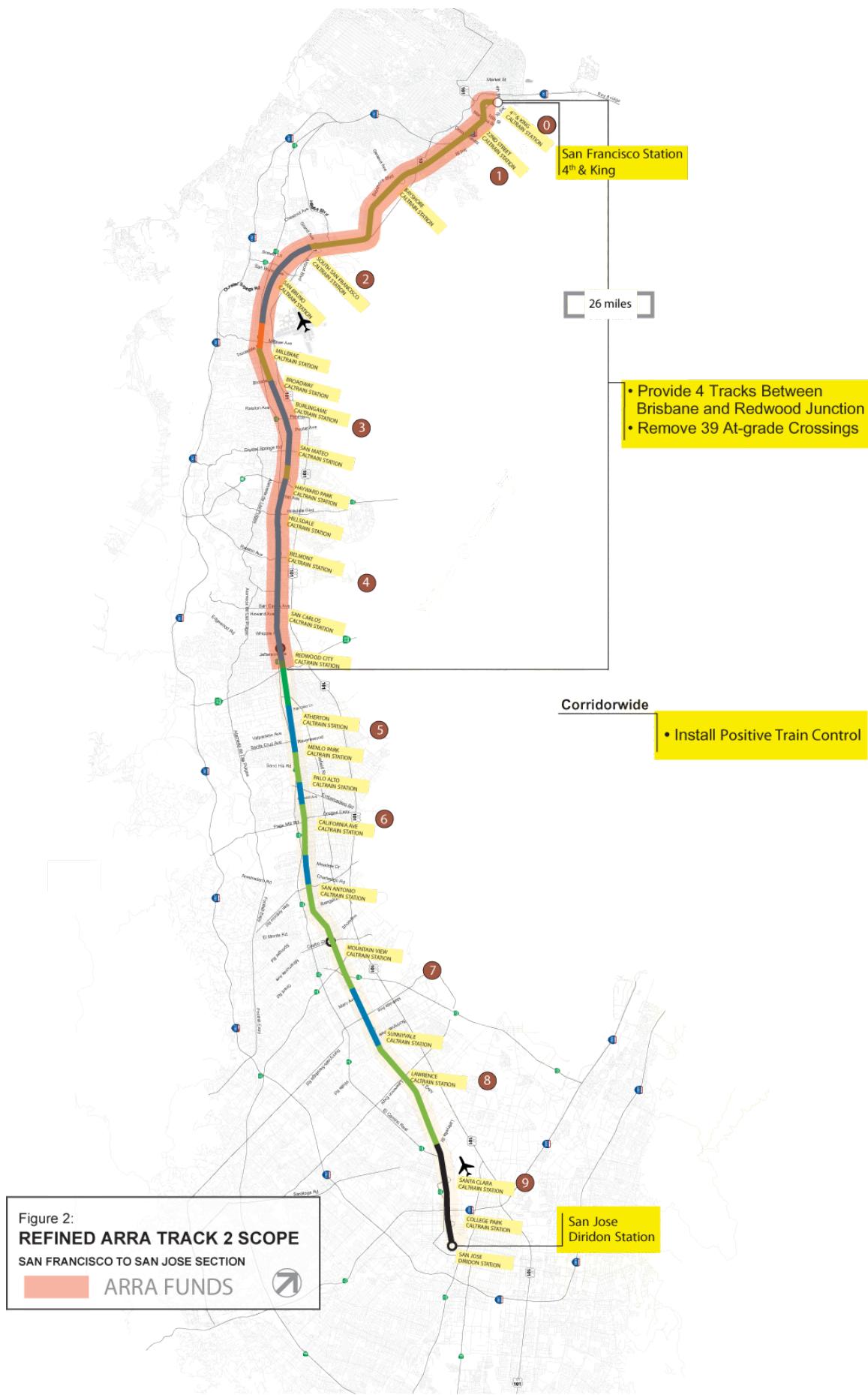
- The total available ARRA D/B funding (\$3.312B) will not suffice to build this complete segment. Program developments have further increased the costs of certain alternatives which remain applicable.
- The refined scope discussed below focuses on infrastructure improvements and grade-separation work starting at the 4th & King Station working south, including work elements having near-term operational benefits to existing rail passenger train service on the Peninsula and meeting the long-term needs of the CHST Program (using a "building block" approach).
- New infrastructure providing four tracks between Brisbane and Redwood Junction is proposed based on the more economical Aerial Structure cross-section as opposed to the Trench solution in some areas such as Burlingame, San Mateo, which would be more expensive.*¹ (see Figure 2)
- Existing two tracks will be shared in sections south of Redwood Junction to Mountain View.
- New infrastructure providing four tracks from Mountain View to north of Fair Oaks Avenue, Santa Clara, is proposed based on the more economical Aerial Structure cross-section (as opposed to the Trench solution in some areas such as Mountain View and Sunnyvale) leading into the existing four-track Caltrain system and into Diridon Station (see Figure 2).
- New PTC (possibly CBOSS or ERTMS) is included to enhance safety and to allow for the vast amount of traffic diversions which will be required during construction, and the 2015 installation deadline.
- Project must meet FRA's operational independence criteria.

A vision for the Caltrain/HST Shared-Use Corridor and a more detailed description of the proposed infrastructure improvements that could be built for the total available ARRA D/B funding of \$3.312 B is provided below.

Note: The attached budget form shows a revised total of \$3,311,346,000 for this section. The intent is to apply the full amount of available ARRA Track 2 grant funding (\$3.312 B) to whichever ARRA-eligible section is funded. The difference between the attached revised estimate and the total available budget would be retained as additional Unallocated Contingency.

¹ If the trench solution is selected then less infrastructure could be implemented.





Vision for the Caltrain/HST Shared Use Corridor

The Caltrain corridor will be a 49-mile long predominantly four-track shared-use section of the California High Speed Train System, operating high-speed intercity service between San Francisco and San Jose.

From San Francisco to CP Coast (just north of Caltrain's Santa Clara station), the HST will share tracks with Caltrain, who operates regional passenger rail service, and Union Pacific, who operates local freight service. Union Pacific's freight operation will be temporally separated (midnight to five AM) between the Port of San Francisco and San Jose to accommodate continuation of freight rail services to shipping customers along the corridor. From CP Coast to San Jose Diridon Station, the southernmost segment of this section, HST will be on dedicated tracks (Subsections 8 and 9).

From CP Coast to San Jose Diridon Station, other rail operators will continue to share tracks that are separate from the HST tracks. These operators include Amtrak's Capitol Corridor and Coast Starlight intercity services, ACE (Altamont Commuter Express) commuter rail services, and Union Pacific who operates local freight service. ACE, operated by the San Joaquin Regional Rail Commission (SJRRC), provides service between Stockton and San Jose with 6 daily trains. Capitol Corridor service is operated by Amtrak under the management of the Capitol Corridor Joint Powers Authority (CCJPA) currently provides 7 daily round trips between Sacramento and San Jose and 16 daily round trips between Oakland and Sacramento.

It is anticipated that by the time of HST operation in 2020, electrification of the Caltrain corridor will have been completed and all Caltrain rolling stock fleet is replaced with EMU train sets equipped with advanced Crash Energy Management (CEM) capabilities. Caltrain will dramatically increase its service from 90 daily one-way trains between San Jose and San Francisco today to 162 daily one-way trains by 2025.

There are three basic phases to the completion of the Caltrain/HST Shared Use Corridor:

1A: Rebuilding North end of Caltrain Corridor and Positive Train Control: capacity improvements and removal of 39 at-grade crossings and Positive Train Control for a smoother, safer Caltrain. (\$3.312 Billion)

1B: Rebuilding South end of Caltrain Corridor and Electrification: capacity improvements and removal of 4 at-grade crossings between Adobe Creek and North Fair Oaks Boulevard in Sunnyvale. This would enable initiation of electrified Caltrain service and HST on the Peninsula and a Millbrae HST station. (\$1.43 B)

2: Completion of the line: capacity improvements and removal of last 5 at-grade crossings on the line in the mid-Peninsula, connections to Transbay Transit Center, construction of the San Jose Diridon HST station, and connection to the statewide HST system. *This phase is not described in detail here as it is not part of the application.*

Phase 1A: Rebuilding Caltrain (\$3.312 billion of ARRA, Prop. 1A, and other state and local funding)

- Phase 1A would grade-separate much of the northern half of the corridor.
- Positive Train Control would be installed under Phase 1A which would provide a safer and more efficient railroad to the Peninsula. Its installation would also comply with mandated FRA deadlines to have PTC operating by 2015.

The scope includes the following improvements:

4th and King to Bayshore

- Subsections: 1A to 1G / Caltrain Mileposts: (MP 0.0 to MP 5)
- Track Design Speed: 10-79 mph

- Environmental Clearance Status: Pending approval as part of EIR/EIS
- Description: The 4th and King station would be reconfigured to accommodate the high speed train service and its equipment on two of its platforms. The existing Caltrain tunnels will be electrified to accommodate both Caltrain and HST service. Common and 16th Streets in San Francisco would be grade-separated as part of this phase of the project.

Bayshore to Millbrae

- Subsections: 2A to 2D / Caltrain Mileposts: (MP 5 to MP 14)
- Track Design Speed: 90-125 mph
- Environmental Clearance Status: Pending approval as part of EIR/EIS. The San Bruno Grade Separation Project is approved under CEQA and NEPA.
- Description: Immediately following the southern portal of tunnel four the existing Caltrain tracks expand from two to four tracks for two miles. This project will continue the four tracks system through South San Francisco and grade separate Linden and Scott Avenues. In the vicinity of Milepost 11, the new four track system will tie in with the planned and environmentally cleared San Bruno Grade separation project, which will be expanded from the two tracks that Caltrain will start construction on in 2011 to four tracks as part of this project. This project has been environmentally cleared under CEQA and NEPA for the four track alignment. From Milepost 12, just past the existing San Bruno Station, to Millbrae this project will continue to expand the two track system to four tracks, up to the Millbrae station where under phase 1A, an additional track will be added to the Millbrae station to the west side of the existing platforms and one track in a cut and cover tunnel, creating a four track system through the station. HST station platforms will be added to the Millbrae station under phase 1B to coincide with the initiation of electrified service on the corridor.

Millbrae, Burlingame and San Mateo

- Subsections: 3A to 3E/ Caltrain Mileposts: (MP 14 to MP 19)
- Track Design Speed: 125 mph
- Environmental Clearance Status: Pending approval as part of EIR/EIS
- Description: Between Millbrae and the southern end of Downtown San Mateo the Caltrain and HST system would be a four-track system, above grade, on an aerial structure. This section of the line would grade separate 16 existing at-grade crossings (a third of the 46 total crossings on the corridor) within approximately five miles of the 50 mile Caltrain corridor. The Caltrain stations in this section (Broadway, Burlingame and San Mateo) would be rebuilt with platforms on the outside two tracks.

South San Mateo, Belmont, San Carlos and Redwood City

- Subsections: 4A to 5A/ Caltrain Mileposts: (MP 19 to MP 27)
- Track Design Speed: 125 mph
- Environmental Clearance Status: Pending approval as part of EIR/EIS
- Description: The HST system would transition from an elevated structure to at-grade at Hayward Park and then would transition up on to a berm to the planned location of the new Hillsdale Caltrain station to serve the new residential development at Bay Meadows. The berm through San Mateo would transition to an elevated, four-track structure through Belmont and San Carlos where the existing two track berm would be replaced with an elevated structure. Redwood City would have an elevated structure through its downtown. The elevated structure would transition to an at-

grade configuration in order to interface with the existing Redwood Junction and the Port of Redwood City spur. It also would tie in with the existing one mile, four-track section through Redwood Junction. The Caltrain stations in these sections (Hayward Park, Belmont, San Carlos and Redwood City) would be rebuilt with platforms on the outside two tracks.

C. San Francisco-San Jose FY10 SDP Grant Application Scope

To help differentiate between what the initial ARRA scope and the new grant application covers, a brief description of the new grant application scope follows:

Phase 1B:\$1.43 B of FY10 SDP Grant, Prop. 1A, and other state and local funding Refer to Figure 3

- Grade-separate the southern portion of the line between Mountain View and Sunnyvale and expand the railroad from two to four tracks.
- Electrify the Caltrain system from San Francisco to San Jose
- Construct an HST station at Millbrae to facilitate intermodal connections to Caltrain, Samtrans, BART and San Francisco International Airport.

Mountain View / Sunnyvale

- Subsections: 7A to 7D / Caltrain Mileposts: (MP 33.5 to 39.4)
- Track Design Speed: 125 mph
- Environmental Clearance Status: Pending approval as part of EIR/EIS
- Description: Between Adobe Creek and North Fair Oaks Ave in Sunnyvale (MP 33.5 to MP 39.4) the project would grade separate N Rengstorff Ave, Castro Street, Mary Avenue and Sunnyvale Avenue and expand the current two-track system to four tracks (most of the existing two-track system would need to be moved to accommodate the four-track configuration. At North Fair Oaks Ave. the new four track section would tie in with the existing Caltrain four tracks, which run from North Fair Oaks (MP 39.5) to the Sunnyvale/Santa Clara border (MP 41.5). The Caltrain stations in these sections (San Antonio, Mountain View and Sunnyvale) would be rebuilt with platforms on the outside two tracks.

System Electrification

- Subsections: 0 to 9B / Caltrain Mileposts: (MP 0 to 48)
- Track Design Speed: 125 mph
- Environmental Clearance Status: Electrification of Caltrain line, cleared under CEQA and NEPA.
- Description: Caltrain has long planned to electrify the line from San Francisco to San Jose. In 2010, the Caltrain Board will certify the environmental document allowing initial work to begin on the electrification of the corridor. The corridor will be electrified for the entire line, including the two-track, at-grade sections through Atherton, Menlo Park and Palo Alto.

HST Station at Millbrae

- Subsections: 2D / Caltrain Mileposts: (MP 13.6)
- Track Design Speed: 125 mph
- Environmental Clearance Status: Pending approval as part of EIR/EIS
- Description: With the electrification of the line, making the HST service on the Peninsula possible, the construction of the station at Millbrae would allow for intermodal connections with Caltrain, BART, Samtrans and San Francisco International Airport. This station would realize one of the HST systems primary goals of connecting with the state's airports.

